United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 1-36
● Original
○ Amendment

Contract Number: EP-C-09-027	Contract Period: option period I 04/01/10 - 03/31/11	SF Site Name:

Title of Work Assignment: IDENTIFICATION AND DEVELOPMENT OF SUITABLE METHODS FOR EVAL. OF PERF OF SEQ CONTAINERS

Suggested Source: ARCADIS

Specific Section & Paragraph of Contract SOW:

Purpose: ● Work Assignment Initiation ○ Work Assignment Close-Out ○ Work Assignment Amendment ○ Incremental Funding ○ Work Plan Approval

Period of Performance
From: 6/30/10 To: 03/31/2011

Comments:

QA Category (check one)
○ I Enforcement
○ II Standard Setting
● III Technology Development
○ IV Proof of Concept
○ NA

Note: To report additional accounting and appropriations data use EPA Form 1900-69A.

SFO 22 (Max 2) ☐ Superfund ☐ Non-Superfund

Accounting and Appropriations Data

	DCN (Max 9)	Budget/FYs (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount	Site/Project (Max 8)	Cost Org/Code (Max 7)
1									
2									
3									
4									
5									

Authorized Work Assignment Ceiling

Contract Period:	Cost/Fee	LOE
Previously Approved		
This Action	New	
Total		

Work Plan / Cost Estimate Approvals

Contractor WP Dated:	Cost/Fee:	LOE:
Cumulative Approved:	Cost/Fee:	LOE:

Work Assignment Manager Name: John Drake		Branch / Mail Code: /
(Signature)	(Date) 6/15/2010	Phone Number
		Fax Number
Branch Chief Name: [illegible]		Branch/Mail Code: /
(Signature)	(Date) 6.15.10	Phone Number
		Fax Number
Project Officer Name: Diane L Pierce	Diane Pierce	Branch/Mail Code: /
(Signature)	(Date) 6/29/10	Phone Number
		Fax Number
Contracting Official Name: Renita Tyus, CO		Branch/Mail Code: CPOD
(Signature) Renita Tyus	(Date) 6/30/10	Phone Number: (513) 487-2094
		Fax Number: (513) 487-2100
Contractor Acknowledgement of Receipt and Approval of Workplan (Signature and Title)		Date

Identification and Development of Standard Methods for Evaluation of the Performance of Sequestration Coatings

Background

Research increasingly indicates that if a CsCl dirty bomb is detonated, immediate action may be necessary to treat urban surfaces. Cs migration and chemical binding are rapid and after some period of time significant decontamination may not be feasible. Immediate treatment of surfaces (within hours) with a sequestrating compound that can be easily applied in large quantities could alleviate much difficulty in subsequent decontamination. In FY-09 performance specifications for such a coating were developed and promulgated as ASTM specification E-2731-09 Standard Specification for Materials to Mitigate the Spread of Radioactive Contamination after a Radiological Dispersion Event. A set of test methods needs to be identified and/or developed to verify that products meet the ASTM performance standard. ASTM E-2731-09 articulates eighteen different performance requirements such as tear strength, abrasion resistance, weatherability, shelf life, and so on. Coatings formulated to meet these requirements are anticipated to be in the class of polymers. Some test methods applicable to polymeric coatings are known to exist (such as tear strength) whereas others will need to be adapted based on similar performance requirements for surface coatings, or will need to be developed. The purpose of this Work Assignment (WA) is to develop test methods for sequestration coatings sufficient to assess two of the eighteen requirements, namely (1) weatherability, and (2) shelf life. Weatherability, for the purposes of ASTM E-2731-09, is defined as the capability of the coating to remain stable (maintain film integrity) under a variety of outdoor environmental conditions for a minimum of one year. The environmental conditions specified include exposure to ultraviolet (UV) light, water immersion, high and low temperatures, and common bacteria. The performance requirement for shelf life given in ASTM E-2731-09 is five years, and is defined as the ability for the coating to be successfully applied and to exhibit the ability to meet the performance requirements as otherwise specified in the standard, after controlled storage for the specified period. Any developed test methods must be applicable to the range of substrates to which it would be applied in an outdoor urban setting. These substrates would include concrete, asphalt, brick, glass, plastic, aluminum, and painted steel. The contractor shall work with the Work Assignment Manager (WAM) to further define performance requirements (such as temperature range) and to research existing methods and build upon the knowledge gained. Bench scale laboratory tests may be required to investigate and demonstrate existing and proposed methods.

Tasks

Task 1.0- The Contractor shall develop a proposed standard test method for determining if a candidate sequestration coating has met the weatherability performance requirement specified in ASTM E-2731-09 when applied to the specified substrates. This development process shall include literature searches and shall potentially include reaching out to the polymer and coating industry to determine the current state of the science. The final method developed shall be demonstrated at the bench scale.

Task 2.0- The Contractor shall develop a proposed standard test method for determining if a candidate sequestration coating has met the shelf life performance requirement specified in ASTM E-2731-09 when applied to the specified substrates. This development process shall include literature searches and shall potentially include reaching out to the polymer and coating

industry to determine the current state of the science. The final method developed shall be demonstrated at the bench scale.

Task 3.0- The Contractor shall propose apparatuses for the proposed methods developed in Tasks 1-2. Upon approval from the WAM, apparatuses shall be constructed for demonstrating these proposed methods.

Task 4.0- The contractor shall test one coating for weatherability and shelf life to demonstrate the proposed test methods. The EPA WAM will draft a quality assurance project plan (QAPP) which will describe how the proposed test methods for weatherability and shelf life will be demonstrated for one sequestration coating (chosen by the EPA WAM). The contractor shall comply with all requirements delineated on the Quality Assurance Planning Requirements Form (QARF) included with this work assignment package (see Attachment #1 to the SOW) and the NHSRC QA requirements as defined in Attachment #2 to the SOW. The QAPP, including any amendments, must be approved by USEPA in writing prior to the start of this task. Additional information related to QA requirements can be found at http://www.epa.gov/quality/qs-docs/r5-final.pdf.

Task 5.0- The contractor shall deliver the data generated from Task 4 along with any corresponding experimental parameters monitored/controlled during the demonstrations.

Products

All products developed related to this SOW shall conform to the requirements of EPA's Handbook for Preparing Office of Research and Development Reports (EPA/800/K-95/002). Substantive portions of this handbook can be found at http://wwwepa.gov/nhsrc under the policy and guidance tab.

Deliverables

Task Description	Task	Product	Date of Completion
Method for evaluating weatherability of sequestration coatings	1	Written test method	3 months from award
Method for evaluating shelf life of sequestration coatings	2	Written test method	3 months from award
Construction of experimental apparatus	3	Experimental apparatus	4 months from award
Demonstrate test methods	4	Data set	4 months from date of QAPP approval

NHSRC QUALITY ASSURANCE REQUIREMENTS FORM
Attachment 1 to the Statement of Work

I GENERAL INFORMATION

Title:	Identification and development of Standard Methods for Evaluation of the Performance of Sequestration Coatings
Description:	Method development for determing is a candidate sequestration coating has met the weatherablility performance requirements
Project ID:	DCMD 3.39
Status:	Original
Number Ammended:	
QA Category:	III
Action Type:	Extramural
Peer Review Category:	
Security Classification:	Unclassified
Project Type:	Method Development; Applied Research
QAPP Status 1:	Not Delivered
Vehicle Status:	Existing Vehicle
Vehicle Type:	Vehicle Number: EC-C-09-027 Work Assignment Number: TBD Delivery/Task Order Number: n/a Modification Number: n/a Other: n/a

*If you are processing an **IAG** or **CRADA**, the responsibility for QA must be negotiated within the agreement. The TLPs in consultation with the QAMs in the various organizations must agree on, and document, which organization will take the lead for QA, the names of the QAM and TLP from each organization, and the QA requirements that will be adhered to during the agreement. Include this info in the IAG/CRADA package.*

II SCOPE OF WORK

Yes Does the Statement of Work contain the appropriate QA language?

The awardee shall comply with all requirements as delineated on the "Quality Assurance Planning Requirements Form (QARF)" included with this extramural action. The contractor shall prepare a QAPP in accordance with the R-2 and R-5 and/or the attachments provided with the SOW. The QAPP must be approved prior to the start of any work. Additional information related to QA requirements can be found at http://www.epa.gov/quality/qs-docs/r5-final.pdf

Yes Does this extramural action involve the collection, generation, use, and/or reporting of environmental data; the design, construction, and operation of environmental technologies; or development of software, models, or methods?
(If "No" then skip to Section IV, and sign the form.)

No Will the SOW or any subsequent work assignments or task orders involve any cross-organizational efforts within EPA?

No Has a QAPP already been approved for the activities specified in the SOW?

Yes Is an applicable QAPP in the process of being prepared, revised, or approved by EPA personnel for future use by the contractor? (QA approval must be obtained before the contractor can start work.)

Provide the expected title for submission to QA staff for approval:

Identification and development of Standard Methods for Evaluation of the Performance of Sequestration Coatings

Provide the approximate date for submission to QA staff for approval:

10/30/2010

III QA DOCUMENTATION OPTIONS

All documentation specified under "Other" must be defined in the NHSRC Quality Management Plan and be consistent with requirements defined in EPA Manual 5360 A1. For all items checked below, there must be adequate information in the SOW (or its appendices) for the offeror to develop this documentation. Where applicable, reference a specific section of the SOW. *(R-2 refers to EPA Requirements for Quality Management Plans (QA/R-2) (EPA/240/B-01/002, 03/20/01) and R-5 refers to EPA Requirements for Quality Assurance Project Plans (QA/R-5) (EPA/240/B-01/003, 03/20/01). Copies of these documents are available at http://www.epa.gov/quality/qa_docs.html.)*

After Award Documentation

Not Applicable	Documentation of an organization's Quality System. QMP developed in accordance with:
Not Applicable	Combined documentation of an organization's Quality System and application of QA and QC to the single project covered by the contract: Developed in accordance with:
Other	Documentation of the application of QA and QC activities to applicable project(s). Developed in accordance with:
	Explain: The QAPP can be developed in accordance with the R2 and R5 or attached QA requirements for the following: secondary data, and method development
n/a	Programmatic QA Project Plan with supplements for each specific project, developed in accordance with:
Not Applicable	Existing documentation of the application of QA and QC activities will be used:

IV SIGNATURE BLOCK

The signatures below verify that the Statement of Work (SOW) has been reviewed to ascertain the necessary QA and QC activities required to comply with EPA Order 5360.1 A2, that the COR understands these requirements, and that the COR will ensure that the quality requirements indicated on the previous pages of this form are incorporated into all associated SOWs. *(Sign/date below, obtain a concurrence signature from the QA Staff, and submit the form along with the other extramural action documentation.)*

Signature on file		Ramona Sherman 6/22/10	
John Drake NHSRC-DCMD Technical Lead Person	06/22/2010 Date	Ramona Sherman NHSRC-IO QA Staff Member	06/22/2010 Date

QAPP REQUIREMENTS FOR APPLIED RESEARCH PROJECTS
(from Appendix B of the NHSRC QMP)

An applied research project is a study to demonstrate the performance of technologies under defined conditions. These studies are often pilot- or field-scale. The following requirements should be addressed as applicable.

SECTION 0.0, APPROVAL BY PROJECT PARTICIPANTS

The EPA Technical Lead Person (TLP) shall be responsible for obtaining signatures of appropriate project participants on the signature page of the QA plan, documenting agreement to project objectives and the approach for evaluating these objectives.

A distribution list shall be provided to facilitate the distribution of the most recent current version of the QAPP to all the principal project participants.

SECTION 1.0, PROJECT DESCRIPTION AND OBJECTIVES

1.1 The purpose of study shall be clearly stated.

1.2 The process, site, facility, and/or environmental system to be tested shall be described.

1.3 Project objectives shall be clearly stated and identified as primary or non-primary.

SECTION 2.0, PROJECT ORGANIZATION

2.1 Key points of contact for each organization involved in the project shall be identified.

2.2 All QA Managers and their relationship in the organizations (*i.e.*, location within each organization) shall be identified with evidence that the QA Manager is independent of project management.

2.3 Responsibilities of all other project participants and their relationship to other project participants shall be identified, meaning that organizations responsible for planning, coordination, sample collection, sample custody, measurements (*i.e.*, analytical, physical, and process), data reduction, data validation, and report preparation shall be clearly identified.

SECTION 3.0, EXPERIMENTAL APPROACH

3.1 The general approach and the test conditions for each experimental phase shall be provided. The statistical methods that will be used to evaluate the data (*i.e.*, ANOVA, or summary statistics) should be identified.

(NOTE: As deemed appropriate to the project by the TLP, the information requested in Sections 3.2, 3.3, and 3.4 may be presented here or in Section 4; the information requested in Sections 3.5 may be presented here or in Section 5; and the information requested in Sections 3.6 may be presented here or in Section 7.)

3.2 The sampling strategy shall be included and evidence must be presented to demonstrate that the strategy is appropriate for meeting primary project objectives, *i.e.*, a description of the statistical method or scientific rationale used to select sample sites and number of samples shall be provided.

3.3 Sampling/monitoring points for all measurements (*i.e.*, including locations and access points) shall be identified.

3.4 The frequency of sampling/monitoring events, as well as the numbers for each sample type and/or location shall be provided, including QC and reserve samples.

3.5 All measurements (*i.e.*, analytical [chemical, microbiological, assays], physical, and process) shall be identified for each sample type or process, and project-specific target analytes shall be listed and classified as critical or noncritical in the QAPP.

3.6 The planned approach (statistical and/or non-statistical) for evaluating project objectives shall be included.

SECTION 4.0, SAMPLING PROCEDURES

4.1 Whenever applicable, the method used to establish steady-state conditions shall be described.

4.2 Known site_specific factors that may affect sampling/monitoring procedures shall be described.

4.3 Any site preparation needed prior to sampling/monitoring shall be described.

4.4 Each sampling/monitoring procedure to be used shall be discussed or referenced. If compositing or splitting samples, those procedures shall be described.

4.5 For samples requiring a split sample for either QA/QC purposes or for shipment to a different laboratory, the QAPP shall identify who is responsible for splitting samples, and where the splitting is performed (*e.g.*, field versus lab).

4.6 If sampling/monitoring equipment is used to collect critical measurement data (*i.e.*, used to calculate the final concentration of a critical parameter), the QAPP shall describe how the sampling equipment is calibrated, the frequency at which it is calibrated, and the acceptance criteria for calibration or calibration verification, as appropriate.

4.7 If sampling/monitoring equipment is used to collect critical measurement data, the QAPP shall describe how cross-contamination between samples is avoided.

4.8 The QAPP shall include a discussion of the procedures to be used to assure that representative samples are collected.

4.9 A list of sample quantities to be collected, and the sample amount required for each analysis, including QC sample analysis, shall be specified.

4.10 Containers used for sample collection, transport, and storage for each sample type shall be described.

4.11 Describe how samples are uniquely identified.

4.12 Sample preservation methods (*e.g.*, refrigeration, acidification, *etc.*), including specific reagents, equipment, and supplies required for sample preservation shall be described.

4.13 Holding time requirements shall be noted.

4.14 Procedures for packing and shipping samples shall be described.

4.15 Procedures to maintain chain_of_custody (*e.g.*, custody seals, records) during transfer from the field to the laboratory, in the laboratory, and among contractors and subcontractors shall be described to ensure that sample integrity is maintained.

4.16 Sample archival requirements for each relevant organization shall be provided.

SECTION 5.0, TESTING AND MEASUREMENT PROTOCOLS

5.1 Each measurement method to be used shall be described in detail or referenced. Modifications to EPA_approved or similarly validated methods shall be specified.

5.2 For unproven methods, verification data applicable to expected matrices shall be included in the QAPP meaning the QAPP shall provide evidence that the proposed method is capable of achieving the desired performance.

5.3 For measurements which require a calibrated system, the QAPP shall include specific calibration procedures applicable to each project target analyte, and the procedures for verifying both initial and continuing calibrations (including frequency and acceptance criteria, and corrective actions to be performed if acceptance criteria are not met).

SECTION 6.0, QA/QC CHECKS

6.1 At a minimum, the QAPP shall include quantitative acceptance criteria for QA objectives associated with accuracy, precision, detection limits, and completeness for critical measurements (process, physical, and analytical, as applicable) for each matrix.

6.2 Any additional project-specific QA objectives shall be presented, including acceptance criteria. This includes items such as mass balance requirements.

6.3 The specific procedures used to assess all identified QA objectives shall be fully described.

6.4 The QAPP shall list and define all other QC checks and/or procedures (*e.g.*, blanks, surrogates, controls, *etc.*) used for the project, both field and laboratory.

6.5 For each specified QC check or procedure, required frequencies, associated acceptance criteria, and corrective actions to be performed if acceptance criteria are not met shall be included.

SECTION 7.0, DATA REPORTING, DATA REDUCTION, AND DATA VALIDATION

7.1 The reporting requirements (*e.g.*, units, reporting method (wet or dry)) for each measurement and matrix shall be identified.

7.2 The deliverables expected from each organization responsible for field and laboratory activities shall be listed.

7.3 Data reduction procedures specific to the project, and also specific to each organization, shall be summarized.

7.4 Data validation procedures specific to each organization used to ensure the reporting of accurate project data to internal and external clients shall be summarized.

7.5 Data storage requirements for each organization shall be provided.

7.6 The product document that will be prepared for the project shall be specified (*e.g.*, journal article, final report, *etc.*). The contents of this document can be referenced to a NHSRC or program-specific QMP, if appropriate.

SECTION 8.0, ASSESSMENTS

8.1 The QAPP shall identify all scheduled audits (*i.e.*, both technical system audits [TSAs] and performance evaluations [PEs]) to be performed, who will perform these audits, and who will receive the audit reports.

8.2 The QAPP shall provide procedures that are to be followed that will ensure that necessary corrective actions will be performed.

8.3 The responsible party(-ies) for implementing corrective actions shall be identified.

SECTION 9.0, REFERENCES

References shall be provided either in the body of the text as footnotes or in a separate section.

QAPP REQUIREMENTS FOR METHOD DEVELOPMENT PROJECTS
(from Appendix B of the NHSRC QMP)

A method development project is typically needed in situations for which there exists no standard or known method, or when an existing method needs to be modified to meet a project-specific need. The following requirements should be addressed as applicable.

SECTION 1.0, BACKGROUND

A description of the situation that requires the generation of a new or modified method shall be clearly stated. *Why are we doing this?*

SECTION 2.0, SCOPE AND APPLICATION

The scope and application of the method shall be clearly stated. Specifically, to what matrices, conditions, *etc.*, will this method apply for this project? What detection limits and/or practical quantitation limits are needed? How is this method intended to be used in the future (*e.g.*, research only, potential regulatory usage, *etc.*)?

SECTION 3.0, PROJECT ORGANIZATION

Responsibilities of all project participants shall be identified, meaning that key personnel and their organizations shall be identified, along with the designation of responsibilities for planning, coordination, sample collection, measurements (*i.e.*, analytical, physical, and process), data reduction, data validation (independent of data generation), data analysis, report preparation, and quality assurance.

SECTION 4.0, EXPERIMENTAL APPROACH INCLUDING SAMPLING AND ANALYTICAL SPECIFICATIONS

4.1 A description of the test(s) to be conducted in order to support the development of the method shall be included. All known or preestablished test conditions and variables shall be provided.

4.2 All planned measurements (*i.e.*, analytical [chemical, microbiological, assays, *etc.*], physical, and process) shall be identified, and project-specific target analytes shall be listed.

4.3 Any known restrictions/specifications for sampling (*e.g.*, collecting soil samples from a site or water samples from a port, *etc.*) or subsampling (*e.g.*, mixing sample before taking subsample for analysis, *etc.*) shall be documented. Include specifications for: type and size of sample containers; amount of sample needed for preparation and analysis; preservation; holding times; representativeness; compositing; QC samples; *etc.*

4.4 The type of instrumentation that will be used and any required instrument conditions shall be documented. Include a discussion of calibration and calibration verification including frequency, acceptance criteria, and corrective action to be taken if acceptance criteria are not met.

SECTION 5.0, QA/QC CHECKS

Any planned QC checks and criteria that must be met for the method to be considered successful shall be specified. QC checks may include spikes, replicates, blanks, controls, surrogates, *etc.*

Note: For chemical methods, quality control procedures to determine the precision, accuracy, and method detection limit should be described. For microbiological methods, positive and negative control procedures should be described.

SECTION 6.0, METHOD VERIFICATION

The tests that will be used to verify the method's performance once it's been developed shall be specified.

SECTION 7.0, REPORT

The report for a successful method development project will be a method written in a format appropriate for the application *e.g.*, SW-846 for RCRA applications, Standard Methods for bacteria in drinking water, a SOP for a specific application (with supporting method performance data appended), *etc.*

SECTION 8.0, REFERENCES

References shall be provided either in the body of the text as footnotes or in a separate section.

Attachment # 2

NHSRC QA

To the Statement of Work
Requirements/Definitions List

EPAs Quality System Website: http://www.epa.gov/quality
EPA's Requirements and Guidance Documents: http://www.epa.gov/quality/qa_docs.html
EPA's Quality System Website: http://www.epa.gov/quality/qs-docs/r5-final.pdf

In accordance with EPA Order 5360.1 A2, conformance to ANSI/ASQC E4 must be demonstrated by submitting the quality documentation described herein. All Quality documentation shall be submitted to the Government for review. The Government will review and return the quality documentation, with comments, and indicate approval or disapproval. If the quality documentation is not approved, it must be revised to address all comments and shall be resubmitted to the Government for approval. Work involving environmental data collection, generation, use, or reporting shall not commence until the Government has approve the quality documentation. The Quality Assurance Project Plan (QAPP) shall be submitted to the Government at least thirty (30) days prior to the beginning of any environmental data gathering or generation activity in order to allow sufficient time for review and revisions to be completed. After the Government has approved the quality documentation, the Contractor shall also implement it as written and approved by the Government.

NHSRC's Quality System Specifications for Extramural Actions –

These requirements typically pertain to single project efforts. The five specifications are:

(1) **a description of the organization's Quality System (QS) and information regarding how this QS is documented, communicated and implemented;**
(2) **an organizational chart showing the position of the QA function;**
(3) ***delineation of the authority and responsibilities of the QA function;***
(4) **the background and experience of the QA personnel who will be assigned to the project; and**
(5) **the organization's general approach for accomplishing the QA specifications in the SOW.**

NHSRC QA Requirements/Definitions List
Category Level Designations (determines the level of QA required):

☐ **Category I Project** - applicable to studies performed to generate data used for enforcement activities, litigation, or research project involving human subjects. The QAPP shall address all elements listed in "EPA Requirements for QA Project Plans, EPA QA/R-5.

☐ **Category II Project** - applicable to studies performed to generate data used in support of the development of environmental regulations or standards. The QAPP shall address all elements listed in "EPA Requirements for QA Project Plans, EPA QA/R-5.

☒ **Category III Project** - applicable to projects involving applied research or technology evaluations. The QAPP shall address the applicable sections of "EPA Requirements for QA Project Plans, EPA QA/R-5 as outlined in the **NHSRC's QMP: QAPP** requirements for the specific project type (see below).

☐ **Category IV Project** - applicable to projects involving basic research or preliminary data gathering activities. The QAPP shall address the applicable sections of "EPA Requirements for QA Project Plans, EPA QA/R-5 as outlined in the **NHSRC's QMP** QAPP requirements for the specific project type (see below).

Project Types:

These outlines of NHSRC's QAPP Requirements for various project types, from Appendix B of the NHSRC QMP (except where otherwise noted), are condensed from *typically applicable sections of R-5 (EPA Requirements for QA Project Plans)* and are intended to serve as a starting point when preparing a QAPP. These lists and their format may not fit every research scenario and QAPP's must conform to applicable sections of R-5 in a way that fully describes the research plan and appropriate QA and QC measures to ensure that the data are of adequate quality and quantity to fit their intended purpose.

☒ **Applied Research Project** - pertains to a study performed to generate data to demonstrate the performance of accepted processes or technologies under defined conditions. These studies are often pilot- or field-scale. The QAPP shall address all requirements listed in "QAPP Requirements for Applied Research Projects" from Appendix B of the NHSRC QMP.

☐ **Basic Research Project** - pertains to a study performed to generate data used to evaluate unproven theories, processes, or technologies. These studies are often bench-scale. The QAPP shall address all requirements listed in "QAPP Requirements for Basic Research Projects" from Appendix B of the NHSRC QMP.

☐ **Design, Construction, and/or Operation of Environmental Technology Project** - pertains to environmental technology designed, constructed and/or operated by and/or for EPA. The QAPP shall address requirements in the EPA Quality System document "Guidance on Quality Assurance for Environmental Technology Design, Construction, and Operation" G-11, at http://www.epa.gov/quality/QS-docs/g11-final-05.pdf. For additional information, you may refer to Part C of "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology," ANSI/ASQC E4-1994, American Society for Quality Control, Milwaukee, WI, January 1995.

☐ **Geospatial Data Quality Assurance Project** - pertains to data collection; data processing and analysis; and data validation of geospatial applications. The QAPP shall address requirements in the EPA Quality System document "Guidance for Geospatial Data Quality Assurance Project Plans" G-5S at http://www.epa.gov/quality/QS-docs/g5g-final-05.pdf.

☒ **Method Development Project** - pertains to situations where there is no existing standard method, or a standard method needs to be significantly modified for a specific application. The QAPP shall address all requirements listed in "QAPP Requirements for Method Development Projects" from Appendix B of the NHSRC QMP.

☐ **Model Development Project** - includes all types of mathematical models including static, dynamic, deterministic, stochastic, mechanistic, empirical, etc. The QAPP shall address requirements in the EPA Quality System document "Guidance for Quality Assurance Project Plans for Modeling" G-5M at http://www.epa.gov/quality/QS-docs/g5m-final.pdf.

☐ **Sampling and Analysis Project** - pertains to the collection and analysis of samples with no objectives other than to provide characterization or monitoring information. The QAPP shall address all requirements listed in "QAPP Requirements for Sampling and Analysis Projects" from Appendix B of the NHSRC QMP.

☐ **Secondary Data Project** - pertains to environmental data collected from other sources, by or for EPA, that are used for purposes other than those originally intended. Sources may include: literature, industry surveys, compilations from computerized databases and information systems, and computerized or mathematical models of environmental processes. The QAPP shall address all requirements listed in "QAPP Requirements for Secondary Data Projects" from Appendix B of the NHSRC QMP.

☐ **Software Development and Data Management Project** - pertains to software development, software/hardware systems development, database design and maintenance, data validation and verification systems. The QAPP shall address all requirements listed in "QAPP Requirements for Software Development Projects" from Appendix B of the NHSRC QMP.

Definitions:

Environmental Data - These are any measurement or information that describe environmental processes, location, or conditions; ecological or health effects directly from measurements, produced from software and models, and compiled from other sources such as data bases or the literature. For EPA, environmental data include information collected directly from measurements, produced from software and models, and compiled from other sources such as data bases or literature.

Incremental Funding - Incremental funding is partial funding, no new work.

Quality Assurance (QA) - Quality assurance is a system of management activities to ensure that a process, item, or service is of the type and quality needed by the customer. It deals with setting policy and running an administrative system of management controls that cover planning, implementation, and review of data collection activities and the use of data in decision making. Quality assurance is just one part of a quality system.

Quality Assurance Project Plan (QAPP) - A QAPP is a document that describes the necessary quality assurance, quality control, and other technical activities that must be implemented to ensure that the results of the work performed will satisfy the stated performance criteria. A QAPP documents project-specific information.

Quality Control (QC) - Quality control is a technical function that includes all the scientific precautions, such as calibrations and duplications, which are needed to acquire data of known and adequate quality.

Quality Management Plan (QMP) - A QMP is a document that describes an organization's/program's quality system in terms of the organizational structure, policy and procedures, functional responsibilities of management and staff, lines of authority, and required interfaces for those planning, implementing, documenting, and assessing all activities conducted. A QMP documents the overall organization/program, and is primarily applicable to multi-year, multi-project efforts. An organization's/program's QMP shall address all elements listed in the "Requirements for Quality Management Plans" in Appendix B of the NHSRC QMP.

Quality System - A quality system is the means by which an organization manages its quality aspects in a systematic, organized manner and provides a framework for planning, implementing, and assessing work performed by an organization and for carrying out required quality assurance and quality control activities.

R-2. EPA Requirements for Quality Management Plans (EPA/240/B-01/002) March, 2001 http://www.epa.gov/quality/QS-docs/r2-final.pdf.

R-5. EPA Requirements for Quality Management Plans (EPA/240/B-01/002) March, 2001 http://www.epa.gov/quality/QS-docs/r5-final.pdf.

Substantive Change - Substantive change is any change in an activity that may alter the quality of data being used, generated, or gathered.

Technical Lead Person (TLP) - This person is technically responsible for the project. For extramural contract work, the TLP is typically the contracting officer's representative (COR). For intramural work, the TLP is typically the Principal Investigator.

Abbreviations:

COR	Contracting Officer's Representative	IAG	Interagency Agreement
NHSRC	National Homeland Security Research Center	QA	Quality Assurance
NRMRL	National Risk Management Research Laboratory	QAM	Quality Assurance Manager
QA ID	Quality Assurance Identification	QMP	Quality Management Plan
QAPP	Quality Assurance Project Plan	SOW	Statement of Work
QS	Quality System	CRADA	Cooperative Research & Development Agreement
TLP	Technical Lead Person		